



University of Missouri System

COLUMBIA | KANSAS CITY | ROLLA | ST. LOUIS

PREPARING MISSOURIANS TO SUCCEED: A BLUEPRINT FOR HIGHER EDUCATION

CBHE MEETING – FEBRUARY 5, 2015

H.C. Foley

Executive Vice President for Academic Affairs, Research and
Economic Development -- University of Missouri System

Senior Vice Chancellor for Research and Graduate Studies –
University of Missouri

Key question(s)

Who is creating the wealth to drive economic growth that will pay for public sector jobs and government programs and that will meet the expectations of the next generations?

Where will innovation come from today?

Where are the innovators and entrepreneurs?

What is our role?

How can we help?

Top 5 Biggest Public Employers: Then and Now

Today Employers

1. Wal-Mart -2,100,000
2. Yum! Brands (KFC, Taco Bell, Pizza Hut) - 523,000
3. McDonalds - 440,000
4. IBM - 434,246
5. UPS - 399,000



1955 Now Employers

1. GM - 576,667
2. U.S. Steel -268,142
3. GE - 210,151
4. Chrysler - 167,813
5. Standard Oil -155,000



What happened to the Private Sector in MO?

1. Federal Government
2. Wal-Mart
3. University of Missouri System
4. Washington University
5. Boeing
6. Mercy Hospital

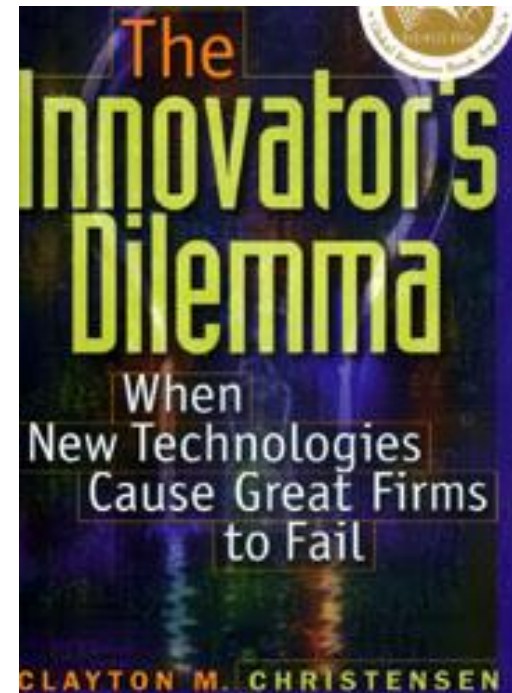
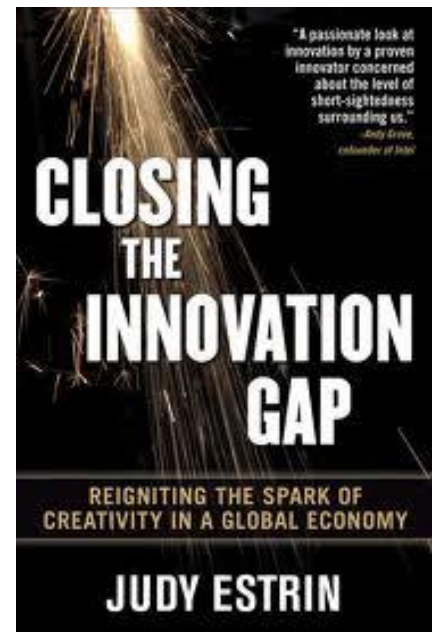
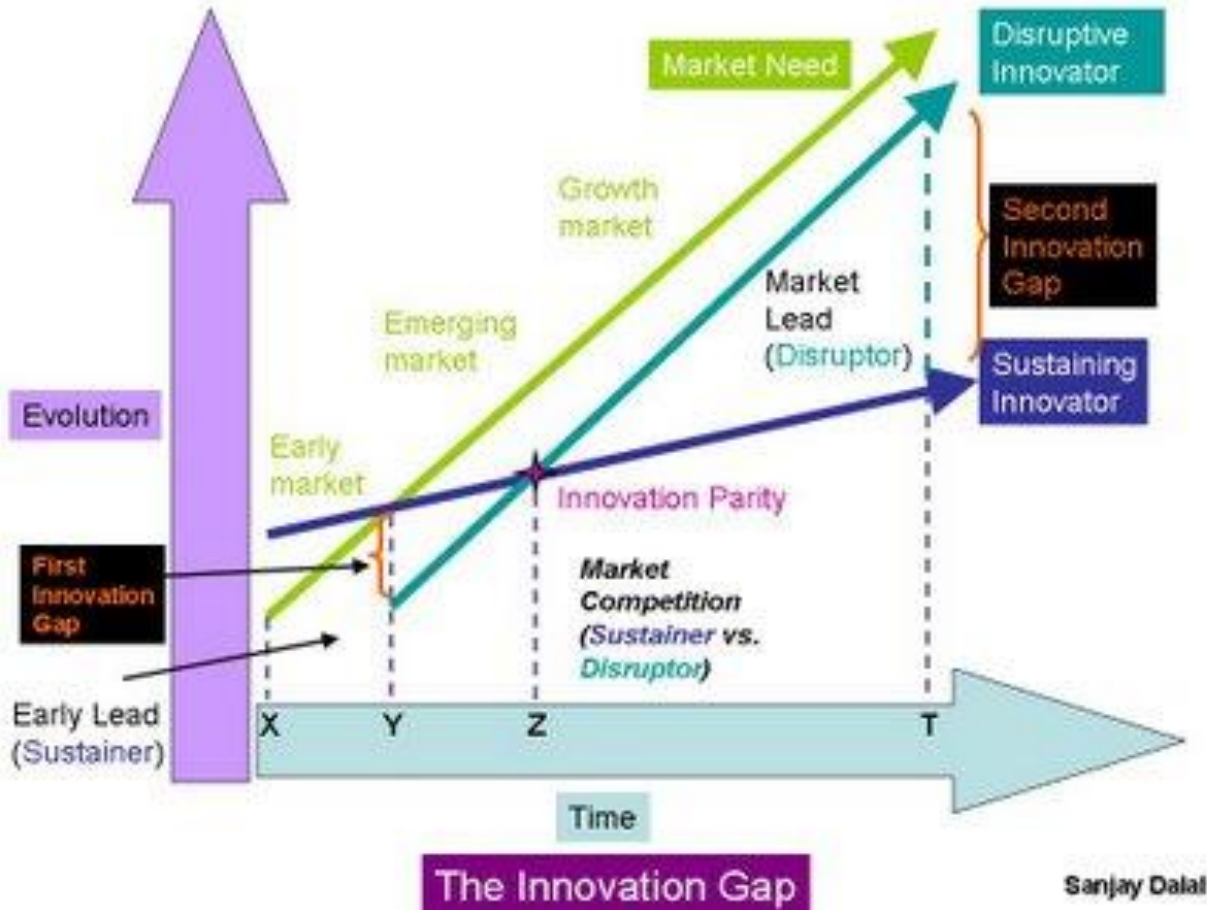




Where have all the corporate basic research labs gone? Far, far away...

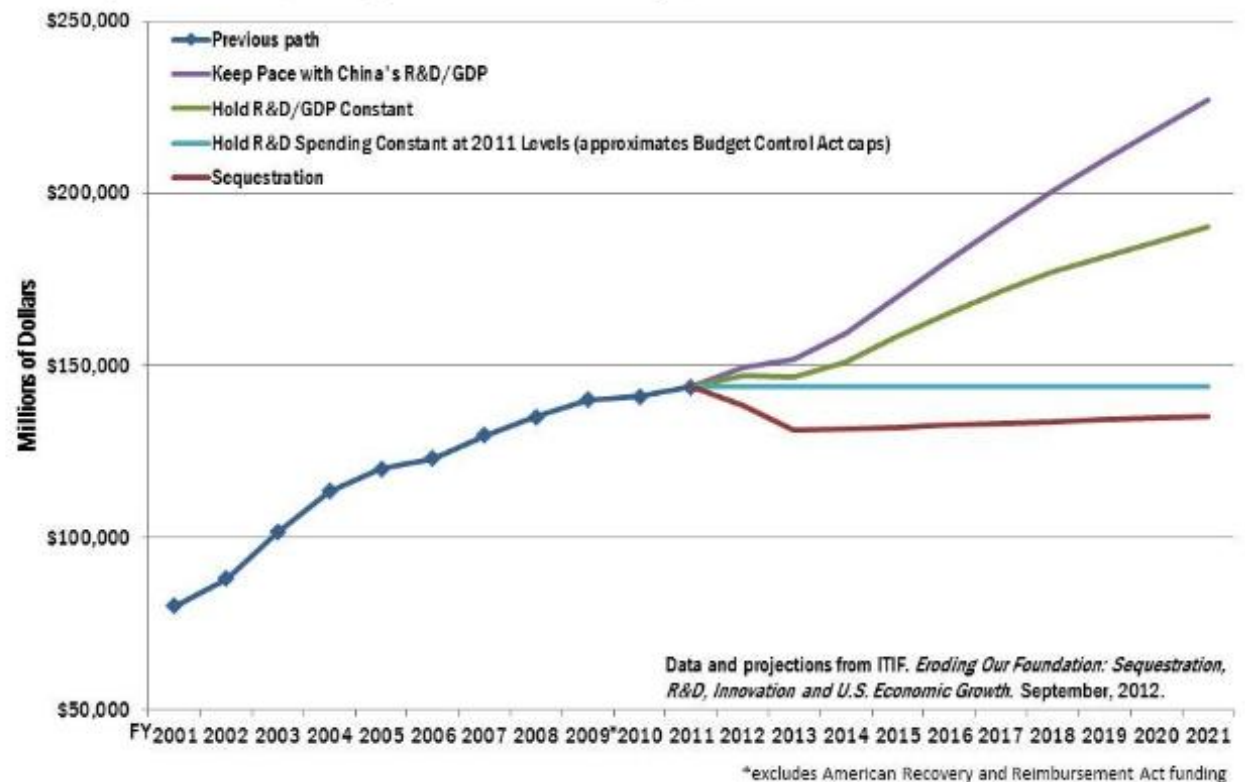


Innovation Gap/Deficit



Innovation Deficit

U.S. Innovation Deficit Projected Federal R&D Investment: Sequestration, Budget Control Act Caps, and Two Other Benchmarks

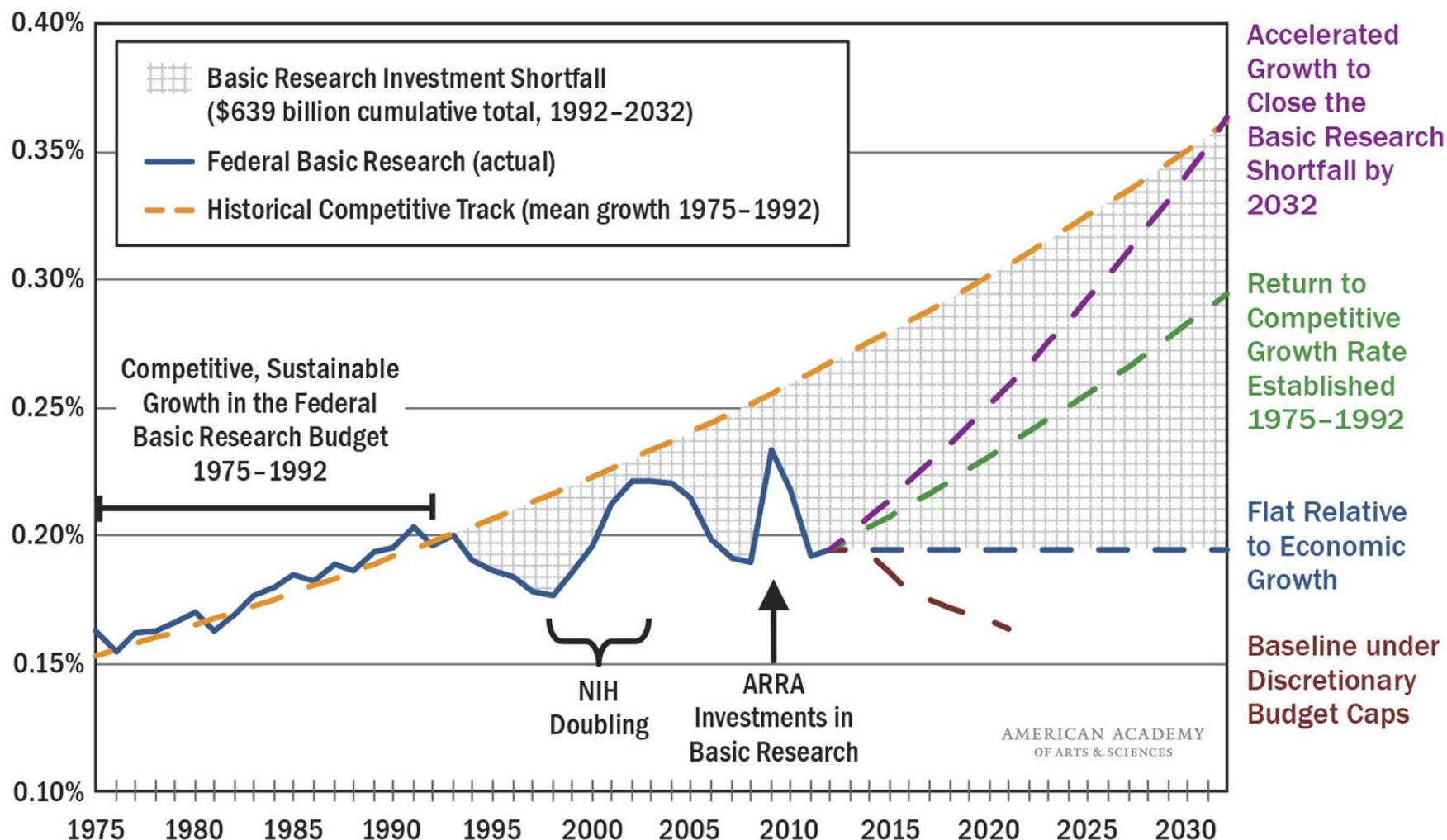


in•no•va•tion def•i•cit *noun* [*i-nə- 'vā-shən \ 'de-fə-sət*]

1. The widening gap between the actual level of federal government funding for research and higher education and what the investment needs to be if the United States is to remain the world's innovation leader.

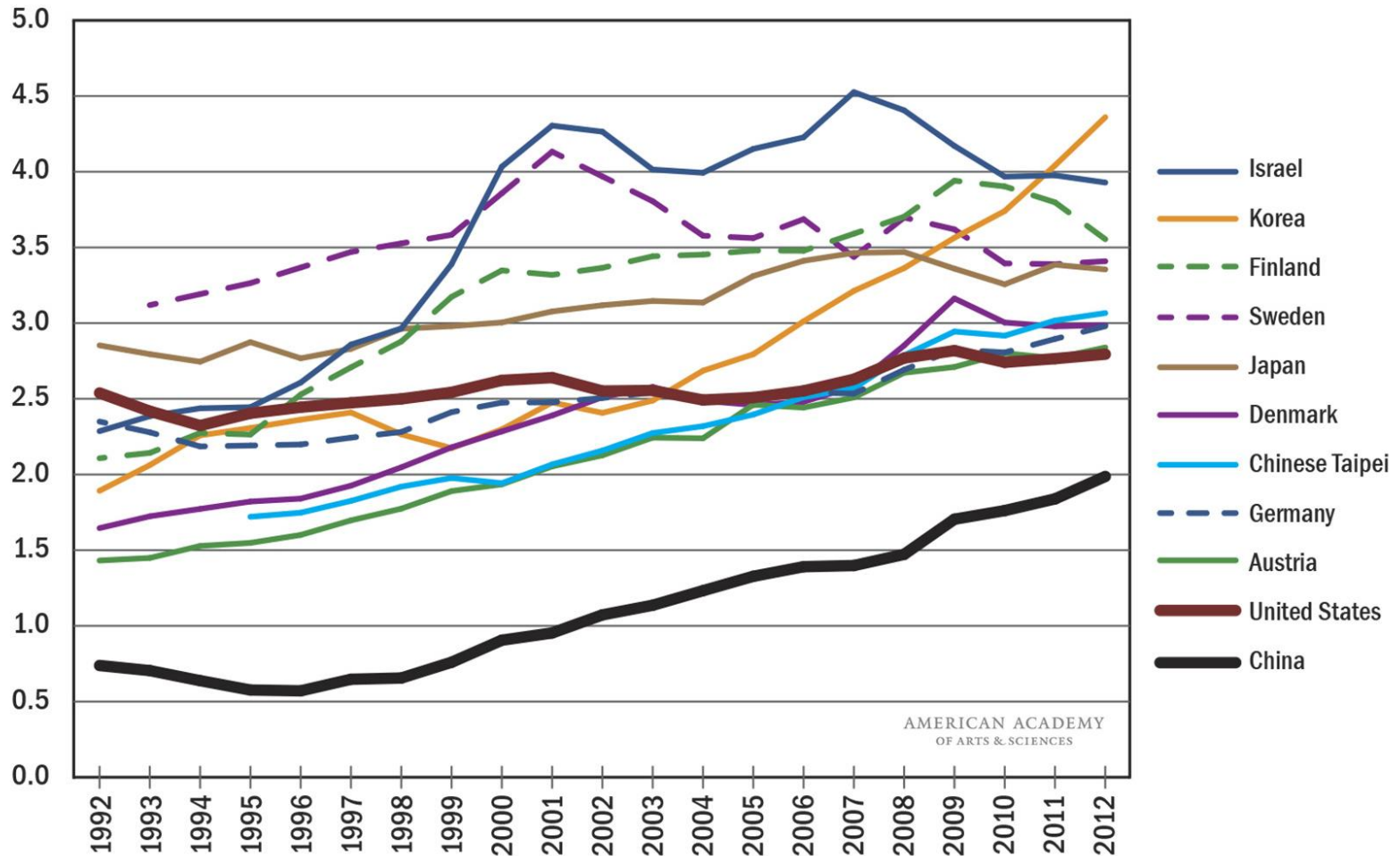
<http://www.innovationdeficit.org/>

Federal Basic Research Investment as a Share of GDP



From Restoring the Foundation: The Vital Role of Research in Preserving the American Dream
(American Academy of Arts & Sciences, 2014)

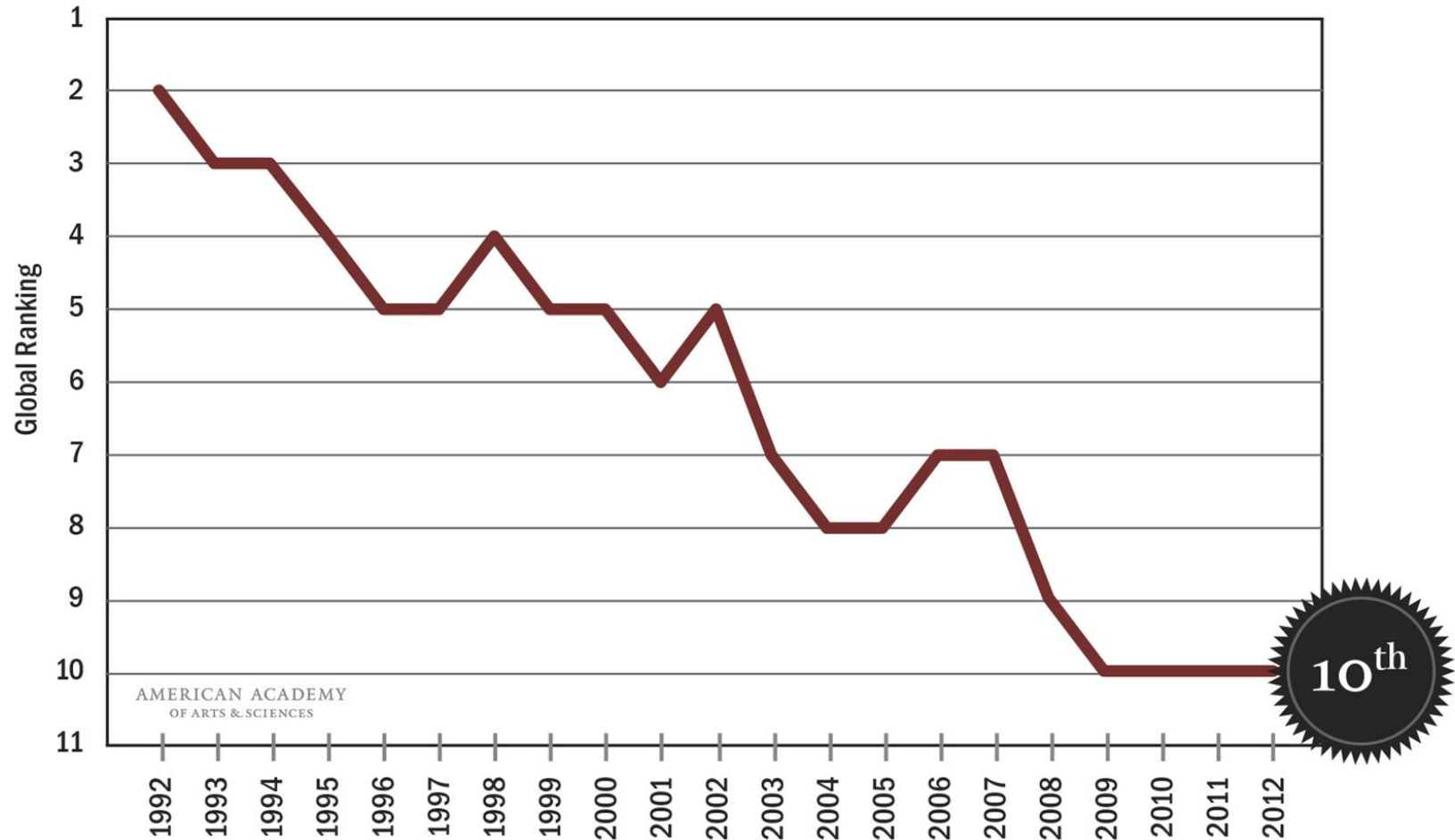
National R&D Investment as a percentage of GDP



From Restoring the Foundation: The Vital Role of Research in Preserving the American Dream
(American Academy of Arts & Sciences, 2014)

The U.S. has Fallen to 10th place in R&D Investment

U.S. ranking among OECD nations by national R&D investment as a percentage of GDP



From *Restoring the Foundation: The Vital Role of Research in Preserving the American Dream*
(American Academy of Arts & Sciences, 2014)

The Times They Are a Changing



“ It is essential to document with solid evidence the returns our Nation is obtaining from its investment in research and development. STAR METRICS is an important element of doing just that.”

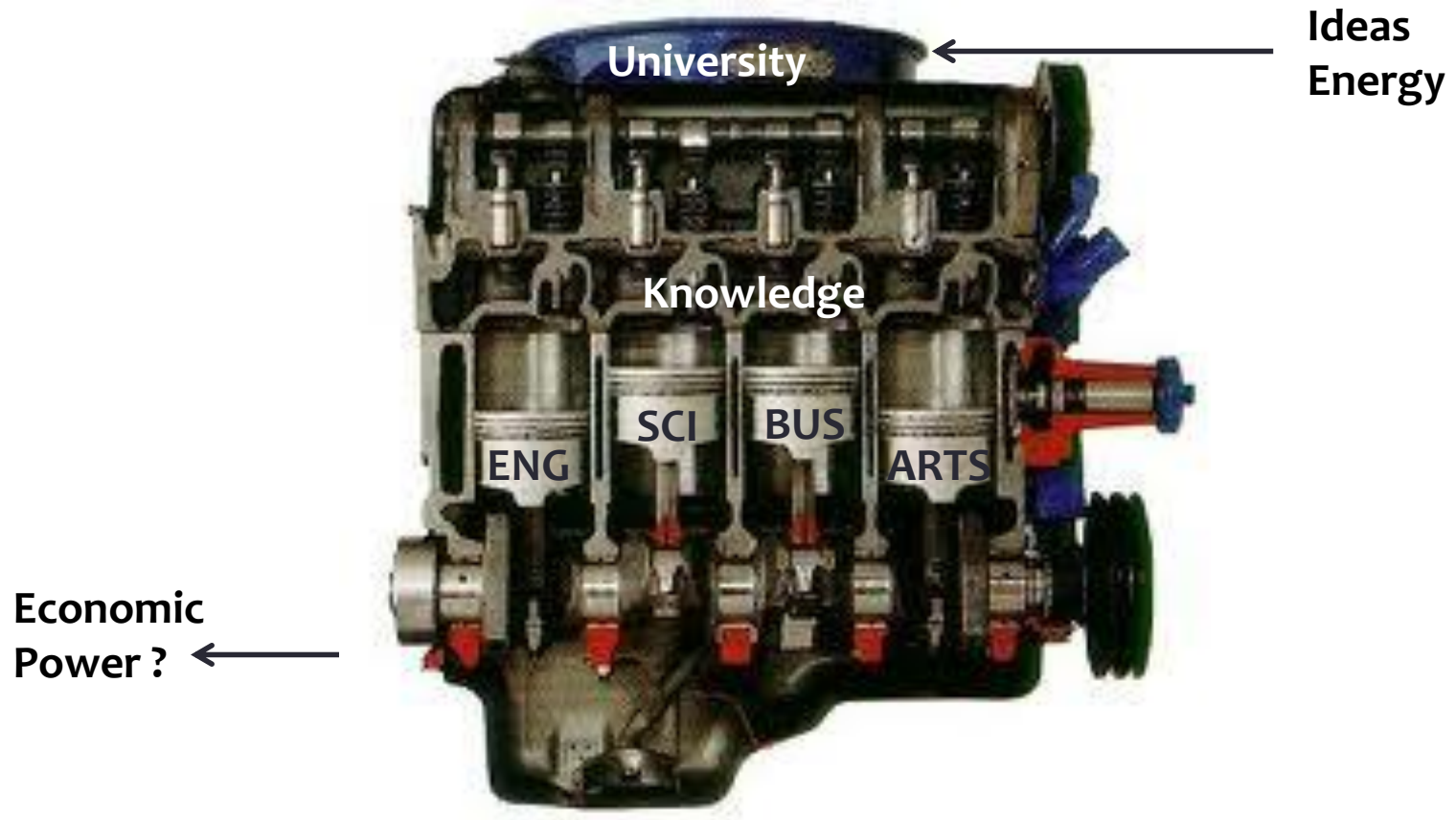
-John P. Holdren
Assistant to the President for Science and Technology and
Director of the White House Office of Science and Technology Policy
June 1, 2010.

Which is to say universities will now be expected to provide the seed corn, the innovations and inventions for the future...

“Universities as Engines of Innovation”

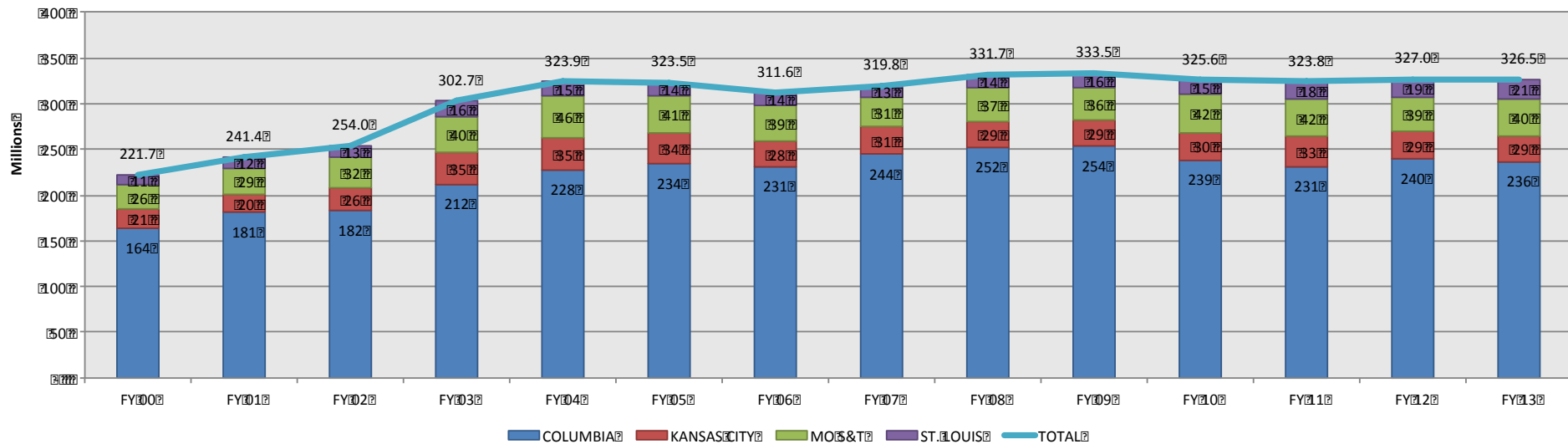


Universities as engines of innovation?



University of Missouri System Research Expenditures per Annum

NSF Research & Development Expenditures
FY2000-FY2013



Community-University-Innovation: *Communivation*

University



Engine

S
c
i
e
n
c
e

T
e
c
h
n
o
l
o
g
y



Community



Transmission

E
c
o
n
o
m
i
c



Innovation

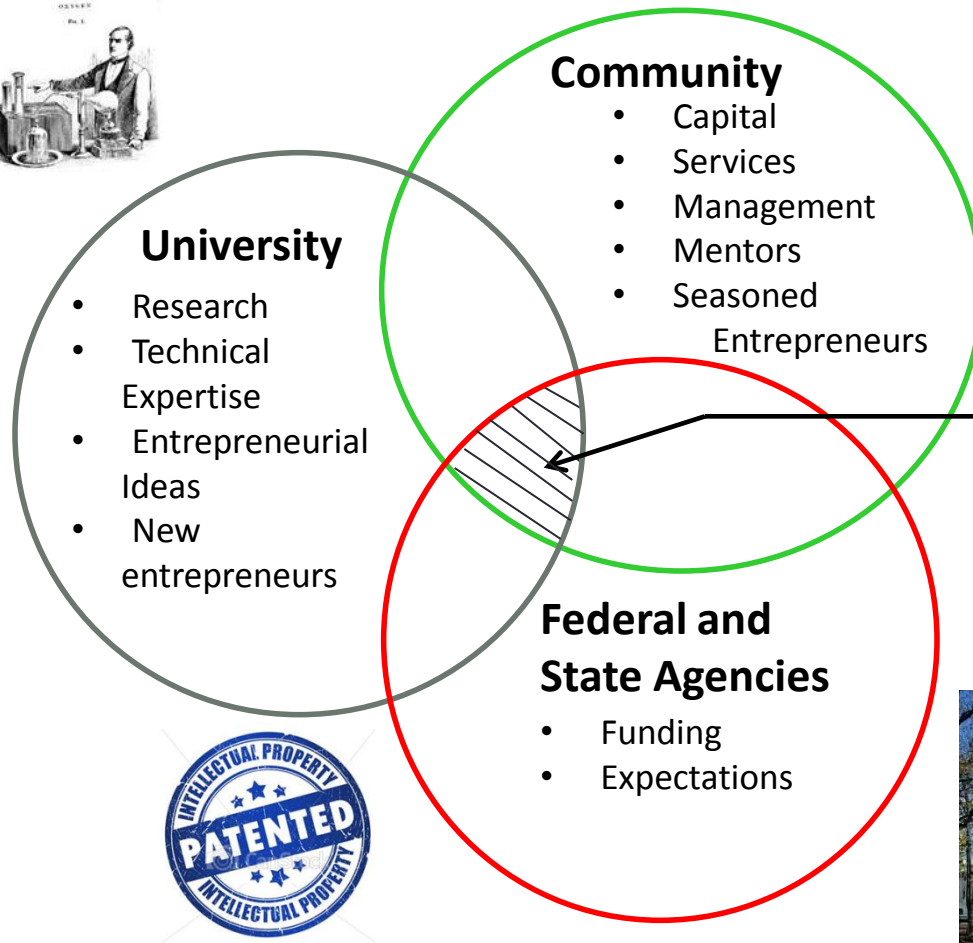


Wheels

The “rubber meets the road”
in the real economy

Universities cannot do this alone

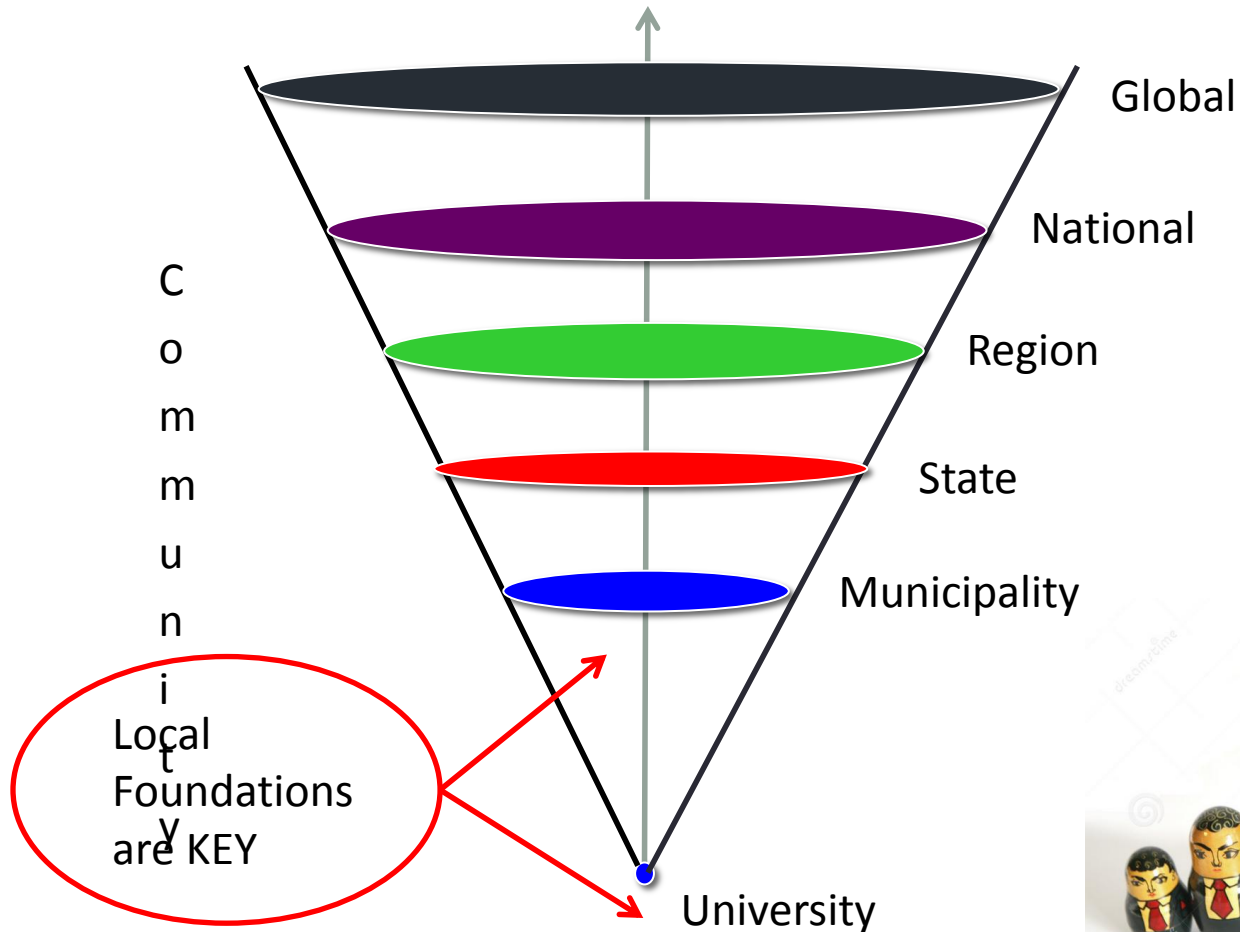
Communitivation requires NEW Partnerships:



Communitivation resides at the intersection of the university, the community, and federal and state support



Communion Scales



Strategy for Research

VISION

By 2025 UM System and the Missouri Research Quadrangle will be a national and international hot bed of innovation driven by high technology startup companies.

- agricultural biotechnology
- nuclear medicine
- information technology,
- additive manufacturing,
- advanced materials sciences

born from University of Missouri research via a regional push for innovation and tech-based economic development.



Strategy for Research

Affects AAU metrics: National
Enhances local impact: State Credibility

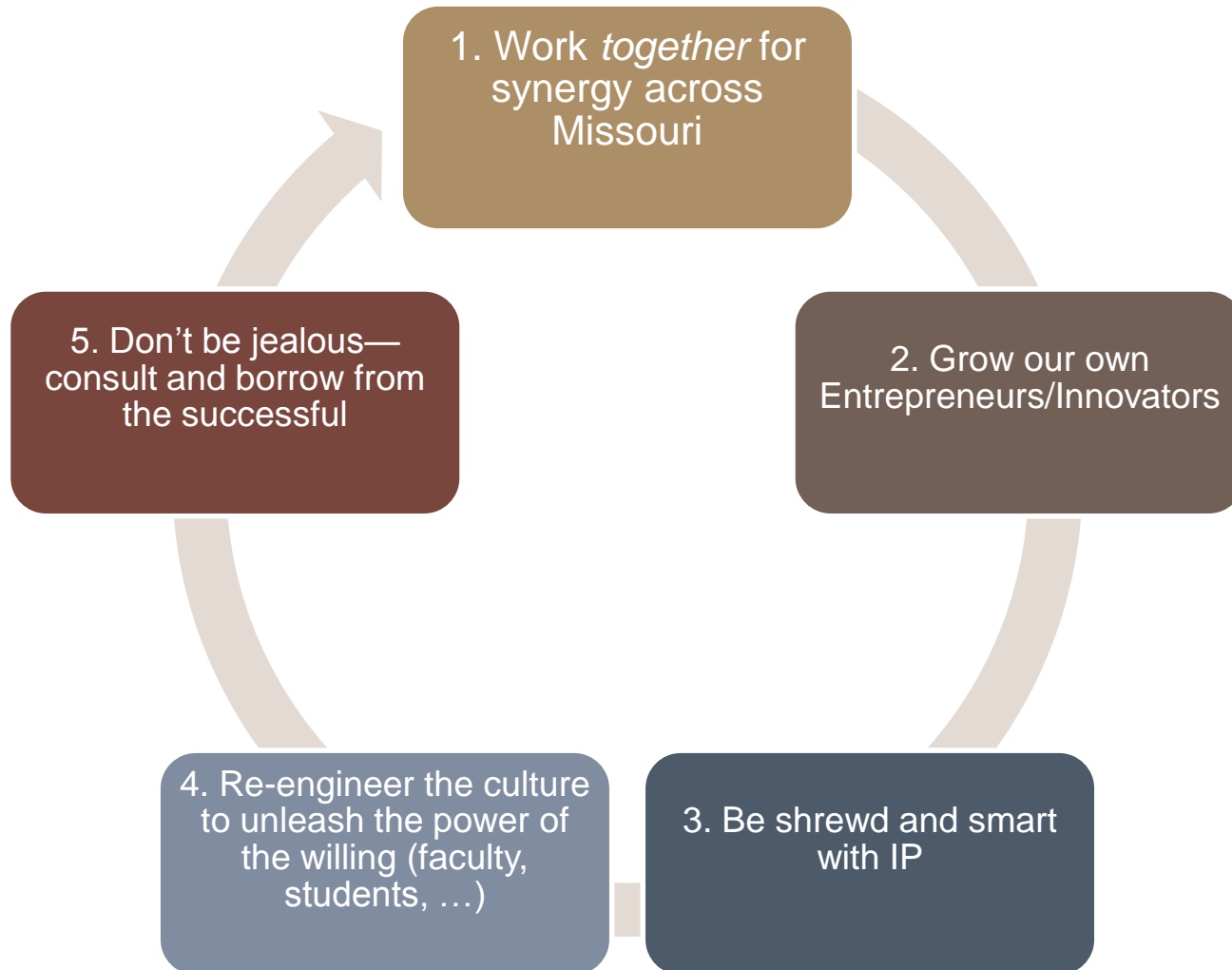


Strategy Statement

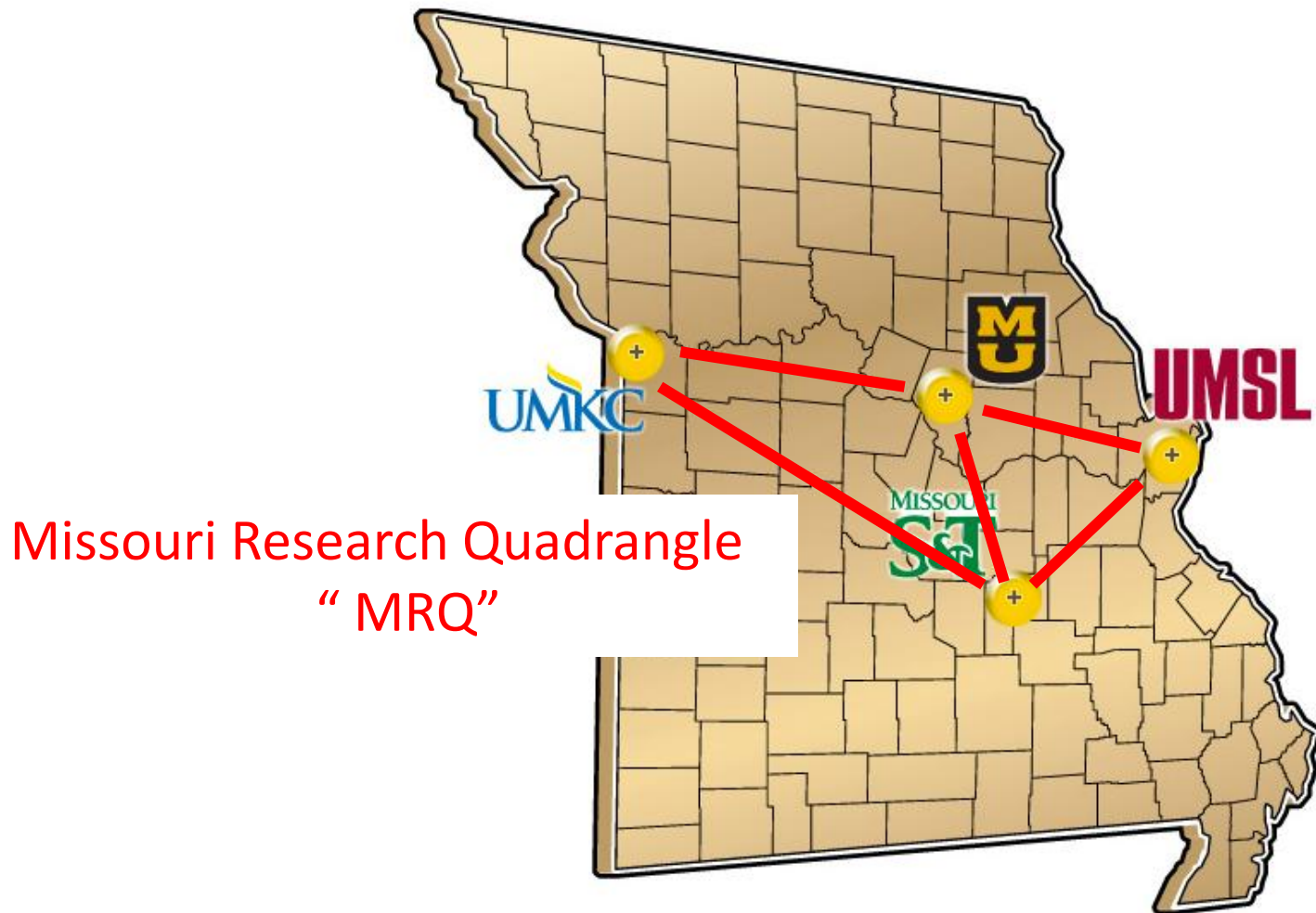
MU and the University of Missouri System will be the “best in class” at the translation of research to products and services that better human health and well being



Strategy for Research: Themes

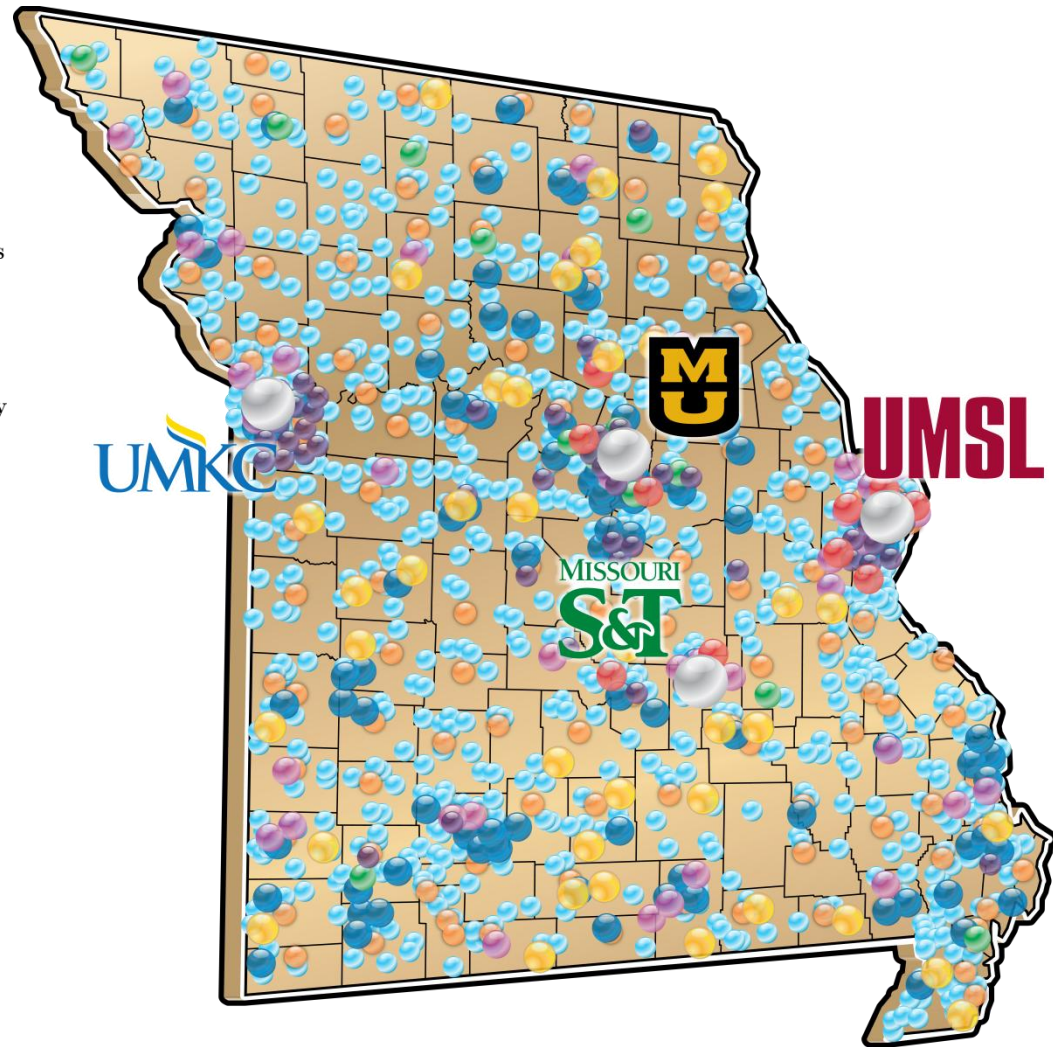


Theme 1: Work *together* for synergy across Missouri

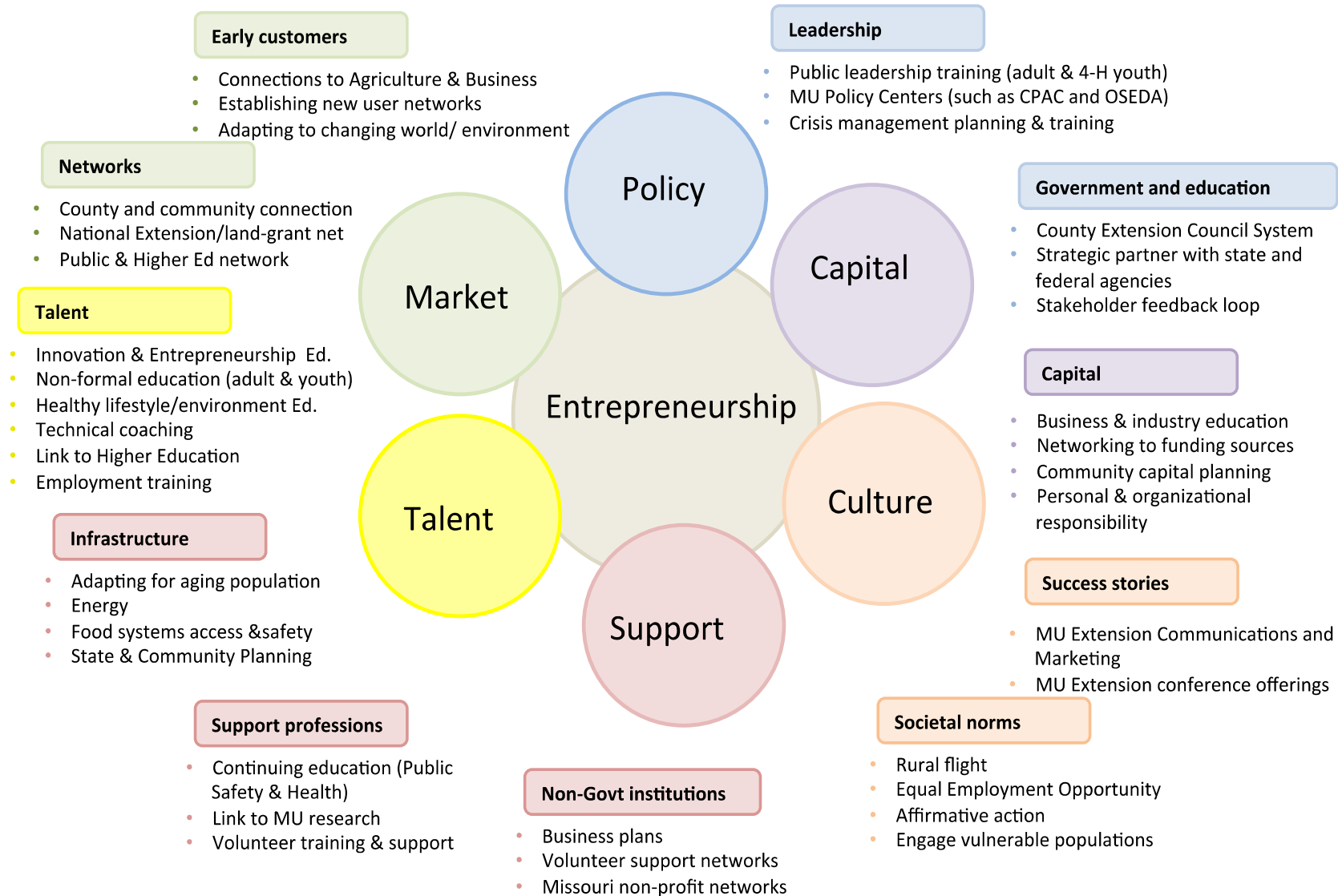


UM System Statewide Reach Must be Aligned

- 4 UM System Campuses
- 10 Research Parks / Business Incubators
- 18 Agriculture Research Stations
- 38 School Districts Served by eMINTS Investing in Innovation (i3) Project
- 39 Small Business & Technology Development Centers
- 56 Health Centers & Affiliates
- 787 MOREnet Sites
- 200 Missouri Telehealth Network Sites
- 114 Counties Served by Extension Centers



Entrepreneurship is an Ecosystem – What role does MU Extension play?



Theme 2: Grow our own Entrepreneurs/Innovators

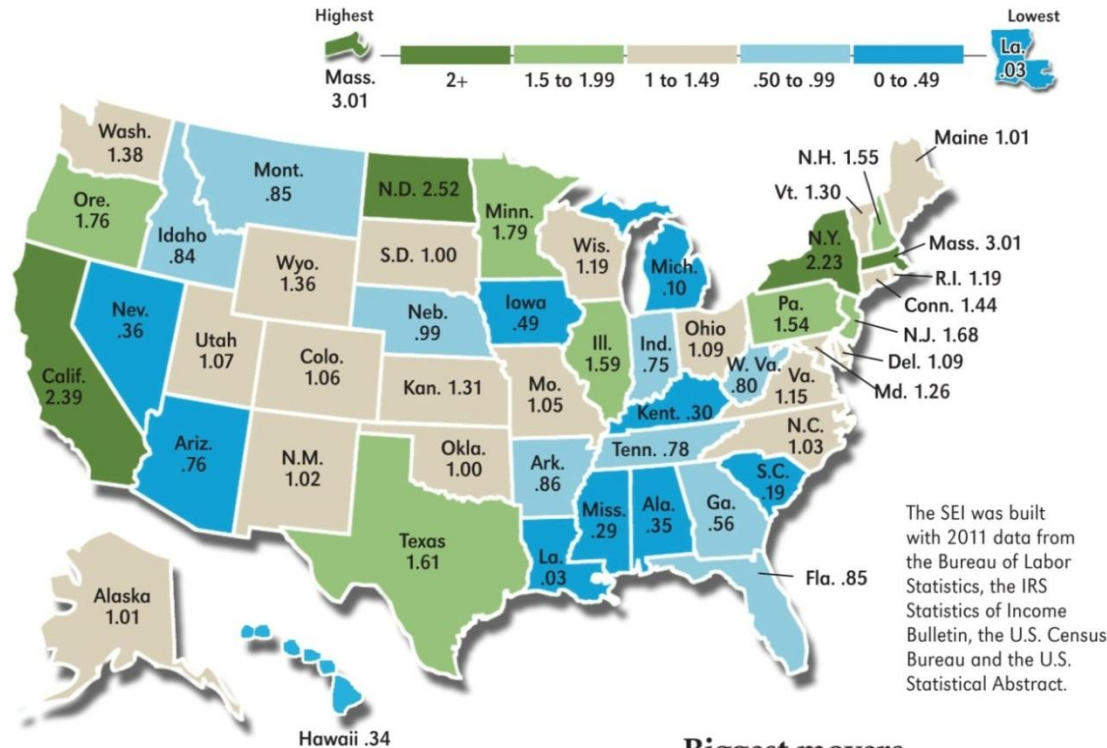
- Build a community of entrepreneurs
 - Formal and informal education
 - Faculty members, post-docs, graduate students and undergraduates
 - Undergraduate minors, on-line tutorials, in person boot camps etc.
- Keep a few of the willing here every year to pursue their business vision in the MRQ
 - Guide them through the ecosystem for NUCOs
 - Make it easy to start, OK to fail, even easier to try again
- Align the elements of the entrepreneurial ecosystem
 - Bring public, private and university resources together



State of Entrepreneurship

The State Entrepreneurship Index tracks core trends and reflects states' entrepreneurship environments, growth in business formation and technological innovation. Each state index is calculated

by comparing five key economic components and determining how much their performance deviate above or below the "median state," which is assigned a value of 1.0.



Top 5

Massachusetts	3.01
N. Dakota	2.52
California	2.39
New York	2.23
Minnesota	1.79

Bottom 5

Kentucky	.30
Mississippi	.29
S. Carolina	.19
Michigan	.10
Louisiana	.03

Biggest movers



Utah

Rose 21 spots to No. 23 (SEI of 1.07).
Ranked No. 44 in 2010.



Louisiana

Fell 45 spots to No. 50 (SEI of .03).
Ranked No. 5 in 2010.

Kauffman Index of Entrepreneurial Activity

1996-2012
Annual Trend Data

1996-2012
Demographic Data

2012
State Data

Legend



Highlights

Hover over each state to see its entrepreneurship rates. The states experiencing the largest increases in entrepreneurial activity rates over the past decade were Nevada (0.21 percentage points), Georgia (0.16 percentage points), Vermont (0.13 percentage points), California (0.12

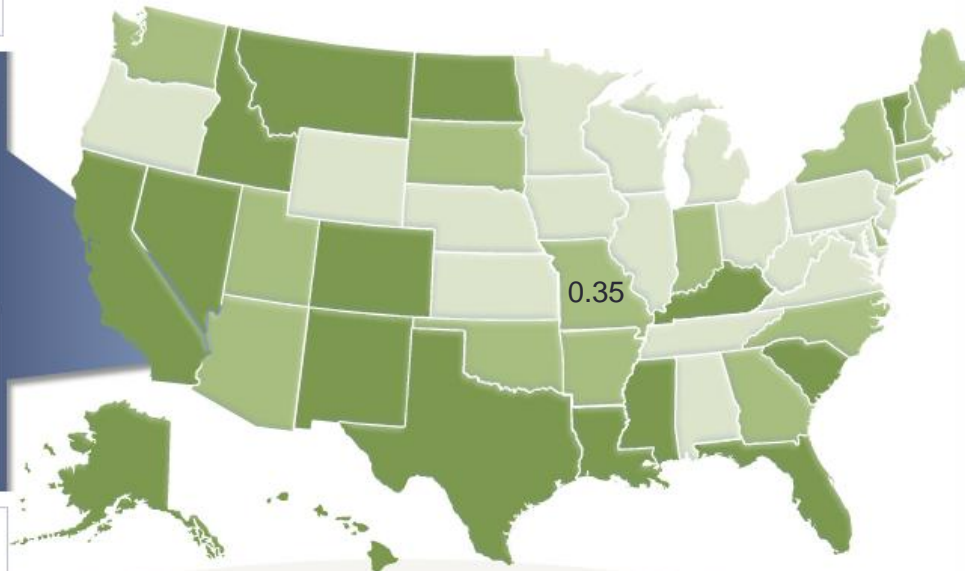
Additional Views:

[TABLE](#)

For additional state views
and MSA regional views:

[DOWNLOAD FULL REPORT](#)

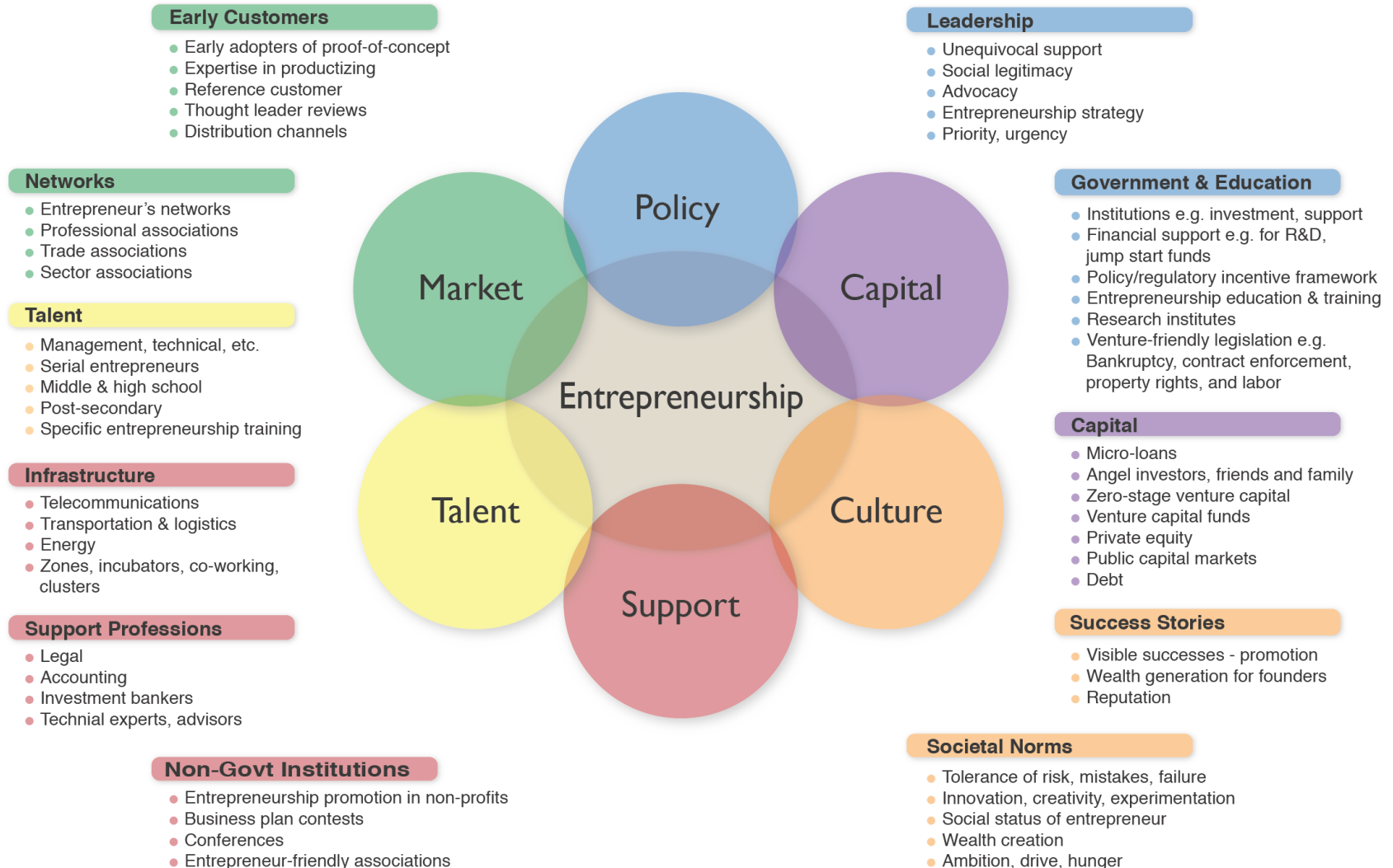
2012 | Rates of Entrepreneurial Activity by State



Notes and Sources

(1) Estimates calculated by Robert W. Fairlie using the Current Population Survey. (2) The Kauffman Index of Entrepreneurial Activity is the percent of individuals (ages 20-64) who do not own a business in the first survey month that start a business in the following month with 15 or more hours worked. (3) All observations with allocated labor force status, class of worker, and hours worked variables are excluded.

Entrepreneurship Requires an Ecosystem





February 21, 2014

www.comboom.com

ENTREPRENEURS! GOING TO #BOOM THIS FRIDAY?!

In case you have not heard, this Friday is one of central Missouri's hottest events for entrepreneurs — #BOOM! (www.comboom.com). As they put it, "Hear from passionate and creative entrepreneurs, meet other ridiculously awesome people, and join the excitement of the Columbia startup scene." Here is their pitch: This one-day summit will connect you with [...]

[READ MORE...](#)

WHY COLUMBIA? EXPAND & RELOCATE ENTREPRENEURSHIP ECONOMIC SECTORS



SITE AND BUILDING INFORMATION

Find detailed information on sites, buildings, and locations for businesses looking to grow... right at your fingertips.

REDI DOWNTOWN INCUBATOR

REDI's Downtown Incubator, next door to REDI's headquarters, serves as an affordable, 24-hour office space for entrepreneurship in Columbia, providing resources and space for local entrepreneurs.



2013 BEST- PERFORMING CITIES - MILKEN INSTITUTE

Columbia jumped nine spots to finish first among the small cities. It had strong performances across the board, with growth in high-tech GDP and the number of high-tech industries driving its tracking.

QUICK LINKS

[BLOG](#)

[INVEST IN REDI](#)

[ABOUT REDI](#)

[PRESS ROOM](#)

[VIDEOS](#)

CONTACT US

* First Name

* Last Name



[HOME](#) [LOGIN](#) [CONTACT US](#)

Search

[ABOUT](#) [MEMBERSHIP](#) [EVENTS](#) [ADVOCACY](#) [JOIN MOBIO](#) [PREFERRED PROVIDERS](#) [EDUCATION / CAREER](#)



@MissouriBIO

2014 Life Sciences Day at the Capitol - Tuesday, January 28th

"advancing legislative outreach"

"open dialogue"

"relationship building"

MOBIO LIFE SCIENCES DAY AT THE CAPITOL - TUES., JAN. 28TH

MOBIO Life Sciences Day at the Capitol - Tues., Jan. 28th

Ag-Research & Innovation Tour - Oct. 20th - 24th

BIO Benchmarking 2013 - Slideshow

New Fisher Scientific Agreement

MEMBER LOGIN

Username

Password

Forgot your ID or password?

[LOGIN](#)

UPCOMING EVENTS

MAR 26 Invest Midwest Venture Capital Forum
Hyatt Regency St. Louis at the Arch(map)

APR 08 BIO Legislative Day Fly-In
US Capitol Building (map)

JUN 24 Missouri Breakfast at BIO International Convention - San Diego University Club Atop Symphony Towers(map)

[VIEW ALL](#)

MEMBER BENEFITS

The following links provide information about the benefits of joining MOBIO as a company, university, or individual. While we emphasize creating successful ventures for biotechnology professionals, our organization spans many social and economic enterprises.

MOBIO WELCOME

The Missouri Biotechnology Association welcomes you to our website. Here you will find an array of information concerning the biotechnology industry and our involvement each and everyday.

[Home](#)

[About the Hawthorn Foundation](#)

[Board of Directors & Staff](#)

[Membership](#)

[News & Resources](#)

[Contact Us](#)

[Login](#)



The Missouri business community helping to build a more vibrant Missouri economy

Click here to see the [Missouri Military Preparedness Study](#)

The Hawthorn Foundation is a highly diverse group of Missouri leaders in business, education, economic development, healthcare and labor dedicated to the development of a vibrant economy for the state of Missouri.

The Hawthorn Foundation raises money from the private sector to fund four activities:

- Trade Mission Support
- Economic development marketing and business recruitment through the Missouri Partnership. The Missouri Partnership is the sole provider of economic development marketing for business recruitment for the State of Missouri.
- Support for the Strategic Initiative for Economic Development
- Support for the Study of Department of Defense Economic Impact in Missouri

Partners in Economic Development since 1981: DED and the Hawthorn Foundation combine funds for job creation.

Relationship to the Department of Economic Development

The Department of Economic Development contracts with the Hawthorn Foundation



[FOLLOW US ON TWITTER](#)

Search



[Home](#) [About Us](#) [Research Support](#) [Commercialization Programs](#) [Innovation Centers](#) [Partnerships](#)



[Research Support](#)

[Commercialization Programs](#)

[Innovation Centers](#)

[Strategic Partnerships](#)

[Technology Incubators and Wet Labs](#)

[Missouri Manufacturing Extension Partnership](#)

The Missouri Technology Corporation ("MTC") is a public-private partnership created by the Missouri General Assembly to promote entrepreneurship and foster the growth of new and emerging high-tech companies. MTC focuses on 21st Century bioscience industries that build on Missouri's rich history in agriculture.

MTC is governed by a 15-member board of directors, which is appointed by Missouri's Governor, Speaker of the Missouri House, and President Pro Tem of the Missouri Senate. The President of the University of Missouri System and the Director of the Department of Economic Development are *ex officio* members of the board.



Innovaprep, LLC

Affiliated Organizations



LATEST NEWS AND NOTICES

[Kansas City Named One of Top 10 Most Promising Tech Hubs to Watch in 2014](#)

[St. Louis Ranked as One of Top 5 Startup Cities to Watch in 2014](#)

[Missouri Startups Yurbuds and LockerDome Get National Press](#)

[2013 MTC Annual Report](#)

[T-REx Deal Marks Evolution of St. Louis' Startup Ecosystem](#)

[Akermin Gets \\$3 Million Grant From Department of Energy](#)

[Graematter Unveils SOFIE Regulatory Intelligence System; To Triple Size of Workforce](#)

[Benson Hill Biosystems Expands Its St. Louis Research Facilities](#)

[EtemoGen Set to Go Worldwide](#)

[VascuLox Awarded \\$827,000 by NIH](#)

[Entrepreneur From Louisville Proves to be Prime Catch for St. Louis](#)

[SCD Probiotics Expansion](#)

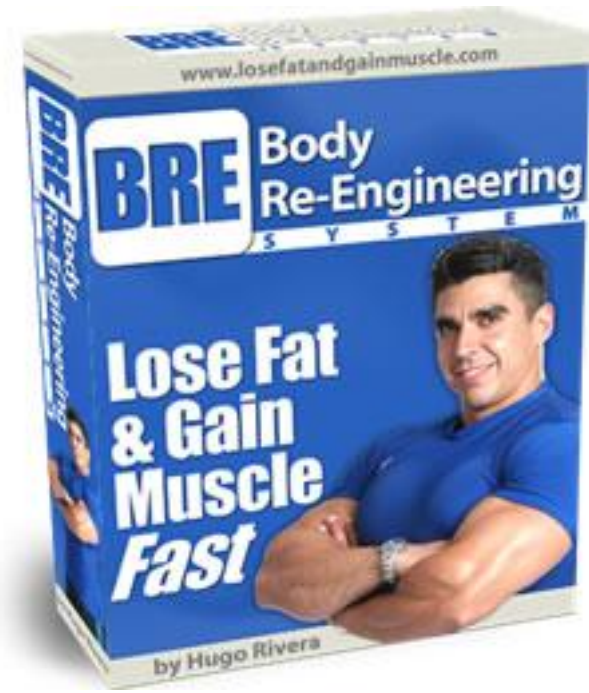
Theme 3: Be Smart with IP

- Loosen IP ownership policies to bring more direct industry investment in UM Research
 - “You attract more bees with honey than vinegar”
 - Buzz in the market place
 - **Let industry own IP from industry-sponsored research (No, it is not a loss, it’s a gain!)**
- Empower faculty to decide on IP ownership on industry-funded research
 - Bring Faculty and Students closer to practitioners
 - Employment pipelines
 - Relevance in the classroom
 - “Create more adjacency of theory and practice”
- Aggressively drive IP (from Federal research) to market through licenses to established Co.s and NUCO.s
 - University shall take more equity stakes in new ventures



Theme 4: Re-engineer the culture to unleash the power of the willing (faculty, students...)

- University culture must be **diverse** enough to broaden the definitions of success
 - **Synthetic Thinking as well as Analytical Thinking**
- Value invention, innovation, entrepreneurship
 - Creative works other than archival journal articles, high end conference proceedings, grants and contracts
 - Arts and Architecture already do this and “always” have. Why not engineering, business, applied sciences, etc?
 - Explore broadened and diversified tenure and promotion criteria?



Theme 5: Don't be Jealous – Consult and Borrow from the Successful

Giving young ventures an entrepreneurial edge

About VMS

MIT
Venture
Mentoring
SERVICE

[Home](#) | [About VMS](#) | [FAQ](#) | [Entrepreneurs](#) | [Mentors](#) | [VMS Companies](#) | [Outreach Programs](#) | [Support](#) | [Contact](#)

VMS's mission is uniquely inclusive, with its corps of experienced volunteer mentors offering services without charge to the entire MIT community, from students and staff to faculty and alumni. By

- ♦ [History](#)
- ♦ [About](#)
- ♦ [VMS Staff](#)



http://web.mit.edu/vms/about_vms.html

Vision

By 2025 UM System and the Missouri Research Quadrangle will be a national and international hot bed of innovation driven by high technology startup companies in

- agricultural biotechnology
- nuclear medicine
- information technology,
- additive manufacturing,
- advanced materials sciences

born from University of Missouri research via a regional push for innovation and tech-based economic development.

